TRMM Flight Operations Monthly Status Review (MSR)

April 24, 2002

FOT Subsystem Overview

- Operations Status
  - Flight Ops Summary - Lou Kurzmiller
  - Electrical/Thermal - Dave Sepan
  - RCS - Dave Sepan
  - Power & Deployables - Justin Knavel
  - ACS & FDS / C&DH - Mark Fioravanti
  - RF / Comm - Nega Berhanu
  - LIS - Nega Berhanu
  - CERES & VIRS - Mark Fioravanti
  - TMI - Dave Sepan
  - PR – Justin Knavel
  - Ground System – Justin Knavel
  - Upcoming Activities – Justin Knavel

Flight Operations Summary

- Supported 444 SN events in April (through 24th)
  - 1 Yaw Maneuver; now -X
  - 6 Delta-V Maneuvers (#393 on 25 April)
- 6 Event Rpts, No Late Acq, No Anomaly Rpts
  - ER # 263: NASCOM; T3 Line Problems from WSGT
  - ER # 264: MOC; Blind Acq event
  - ER # 265: NASCOM; 24 Sec R/T data dropout
  - ER # 266: NASCOM; Loss of Q-Chnl lock (01 Sec)
  - ER # 267: MOC; No GCMR's seen at WSGT
  - ER # 268: MOC Equip; TR2WS3 (GTAS WS) unable to connect to Trend1 9Gb disk

Flight Operations Summary

- Notable Events
  - Continued support of ERBS EOL activities.
  - Supported Xpndr-2 Center Freq Offset Test

- FOT stable in April. Will not retain/obtain additional personnel.
- Home disk on MOC String 2 replaced. (ER # 261 of 29 Mar).
- Data loss after WSC Operator Error (Er # 262 of 29 Mar). All data recovered next event.

Thermal / Electrical Subsystems

- The Thermal subsystem remains nominal
  - No operational issues since arrival at 402.5 km

- The Electrical subsystem remains nominal
  - No operational issues since arrival at 402.5 km

RCS Subsystem

- RCS performed 6 successful Delta-V maneuvers (#388 - #393)
  - Current fuel remaining is 260 kg by the mass flow method.
  - Current fuel remaining by the PVT method is 241 kg.
  - Current Precision Pressure Transducer level is down to 165.8 psia.
- RCS subsystem is in “blow down” mode and is no longer pressure regulated.
- The current EOL estimate at 402.5 km is April 2003 using 157 kg of fuel as a baseline for controlled re-entry.
- Upcoming Events
  - Continue to review and train with Delta-H procedure, EOL scripts, and the “one-shot” procedure.
  - Review all required steps for a 30+ minute Delta-V maneuver and test with the simulator.

Power Subsystem

- Open issues
  - Essential Bus Voltage Monitor Backup (S/C Processor Current)
    - » Dwell Table needs to be completed
    - » Complete and uplink Filtering Code (Late April)
  - Solar Array off-pointing
    - » Test Delta V and Yaw maneuvers with simulator
    - » Longer duration on-board test

Deployables Subsystem

- Solar array drives and HGA continue to operate nominally.

ACS Subsystem

- ACS is performing Nominally.

FDS/C&DH Subsystems

- UTCF/FS Status;
  - No UTCF Adjustments were performed.
    - » Current UTCF value is 31535996.808350 sec
    - » No Leap Second update in June.
  - No FS Adjustment was performed on 02-061 (Mar., 2nd).
    - » Current FS value is x'7EA'.
- Planned RTS Changes
  - Nominal TDRS AOS RTS format changes to allow easier modification as DS storage status changes, and to simplify transponder offsets if required.
  - Initially will be performed with RTSs 65 - 68, other AOS RTSs may also be converted later.
  - On hold until completion of FDS TS Telemetry filter installation.

RF Subsystem

- No Generic Late Acquisition (#117) since last MSR.
- 5 RF Event Report this month.
  - ER # 262 - 088/TDS/17:19z event : Q-channel drop-out during the pass (TTR#24277). Though White Sands showed a good lock on both I & Q, there was an in-house misconfiguration of the Input Terminal Unit (ITU) on the return link at the White Sands. An additional pass was scheduled and data storage activities were performed. All data recovered.
  - ER # 263/4 - 093/TDE/02:43z event : Q-channel drop-out throughout the event (TTR#24283). WSC reported that there were T3 line hits between Las Cruces and El Paso during this time frame which also affected ERBS & FUSE. The 093/171/0400z event was added (TTR#24282) and the S/C was acquired using the blind acquisition procedure; however, a 5:11 min VIRS science data was lost due to recorder overflow.
  - ER # 265 - 096/171/22:28z event : Real-time data drop-out for 24 sec between (22:32:44-22:33:08). It was also confirmed at the WSC (reason unknown). No impact on data storage activity.
  - ER # 266 - 102/TDW/07:00z event : The FOT noticed a large number of sequence errors on VR4 (PR) (TTR#24291). WSC was notified but

RF Subsystem (cont'd)

confirmed a good lock on both I & Q channels. It was assumed as a Possible line problem. All data recovered.

- ER # 267 - 107/TDE/02:55z event : The FOT was unable to send a GCMR command to change coherency modes. WSC built and sent a local GCMR to correct the problem (TTR#24302). All data recovered.

- Frequency offsets (monthly average)
  - Transponder #1 = + 729.880 Hz
  - Transponder #2 = - 759.874 Hz
  - A transponder # 2 center frequency offset of 772 Hz was performed on 02-107 (April 17th). The offset command will be placed in the daily ATS load until the new LOS RTS # 111 is uplinked to the S/C.

LIS Instrument

- 1 Routine MSFC real-time command request was performed on 02-098 (April 8th) to reduce packet sequence errors.
- No open issues

CERES/VIRS Instruments

- **CERES**.
  - Powered OFF.
- **VIRS**, continues to operate nominally.
  - Two sets of VIRS Solar Calibrations were performed on 02-106 (Thurs., April 16th).

TMI / PR Instruments

- No Open Issues with the TMI instrument

- PR External Calibration was performed on 02-109 (April 19th) at 07:02:30 (bin 70).
  - **Calibration was cancelled, but the FOT did not receive cancellation message from TSDIS.**

Ground System / Security

- Backup router tests – next week
- 9 GB Home Disk on String 2 replaced on 02-092 (April 2nd).
- 9 GB TREND1 Disk replaced on 02-108 (April 18th).
- 9 GB Home Disk in SOTA Bay still being repaired

Upcoming Activities

- 0-2 Months
  - Uplink PSIB Alternate Telemetry Patch and dwell tables (April)
  - Perform remaining FSW revisions due to new Kalman Filter mode of operations and Boost activities
    - » 2000 Epoch Magnetic Field Patch
    - » Table 51 DSS Tolerance Versions
    - » Table 54 Update for Roll/Pitch/Yaw to 15°/8°/8°
  - Place remaining permanent table / patch changes into EEPROM
  - Select which Trending system to obtain / implement for MOC upgrade. Obtain GMSEC recommendation.
  - Support finalization of TRMM End of Life and Reentry Plan
  - Perform SA 55° offset long-duration test

Upcoming Activities

- 2-3 Months
  - Install new TDRS HGA AOS RTSs
  - Begin implementing new MOC trending system
  - Continue trade studies for upgrading other MOC ground system and software components
  - Participate in End of Life Plan review(s)
  - End Of Life Plan Testing, and Simulations continue
  - Continue to close open CCRs, MOCRs, and MSR Action Items